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LUPINO: NO LONGER A HAS-BEAN?

by DAVID SPURGEON

International food aid has had a variety of effects on developing countries — not all of them good. One of these has been to change the food habits of their people, another to make them dependent on foreign food crops.

A project funded by Canada's International Development Research Centre and carried out in Chile aims to help reverse this trend in some Latin American countries by substituting an indigenous legume for an imported one.

The foreign crop is soybean, the indigenous one lupino. Soybeans cannot be grown in Chile and in many other Andean countries, and therefore were not a food source before international aid shipments began sending them into Latin America in the form of flour and other products. The lupino bean, on the other hand, had been cultivated as a food and consumed by the populations of Andean countries for centuries.

The project, to be carried out by INTEC-CHILE, a non-profit applied industrial research agency affiliated with the Chilean Development Corporation, will investigate possible methods of substituting lupino for soybean ingredients in currently used food products, without reducing either their acceptability or nutritive qualities.

Although historically lupino beans have been long used as food among Andean peoples, in recent years they have been fed mainly to animals. Even Chile's Mapuche Indians, who live in abject poverty, eat them only when other

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crops fail or are not available. Thus only about 1500 hectares (ha) of land are under cultivation to lupinos, although some 40,000 ha are available in the district where these Indians live. A commercial market for the legume could become an important source of income for the Mapuche.

The plan of the project is not to use the beans directly for food, but to process them for use in more acceptable ways, just as soybeans are — for example, as a high-protein additive to a mixture of cornmeal, dry skim milk, minerals and vitamins for babies; in flour for cooking or as an emulsifier and stabilizer; or as an extender for use with meats.

The value of substituting a plant native to the Andean areas is apparent when one considers the recent growth of requirements for soy and soy products there. Soybeans have now become a regular food source in these countries because their introduction through food aid spurred the development of products that now have become widely accepted. Textured soy protein, for example, is now being used as a meat extender.

Large-scale imports of soybean not only use up scarce foreign currency reserves but also create a dependency on other nations. Imports through foreign aid programs are also a cause for concern because of the uncertainties of foreign aid, especially in light of current re-evaluations among donor nations of the value of food aid programs.

The project will involve INTEC-CHILE's pilot plant for wet and dry food processing and its laboratories for analysis of the products and consumer testing. It will assess the effects of adverse storage conditions on lupino, analyze the performance of milling and other devices, involve the preparation of lupino flour and blended products, produce and analyze lupino concentrate and textured plant protein.

Lupino (also called lupin, lupine, tarhui, altramuz, etc.) is a legume similar to soy with a high protein content (approximately 40 percent dry weight). It is high-yielding — approximately 3 tons/ha and can be cultivated on marginal lands, which means it will not compete with other crops. Like other legumes, lupino can fix nitrogen from the air, which makes it a natural

fertilizer. Thus when grown on the same fields with wheat and other cereals (between these crops in a process known as intercropping), it has additional value.

What the project must produce, if defatted lupino flour is to substitute effectively for soybean flour, is a product that is light in color, has adequate particle size, the necessary functional properties and nutritional value. Blended products will use the same standards used for soybean mixture and must display similar nutritional performance, storage stability and customer acceptance. The protein concentrate must contain 65-70 percent protein, have nutritional qualities similar to those of casein, a bland flavour and a light colour.

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